

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/00364

## A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl<sup>7</sup> H01Q1/52

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl<sup>7</sup> H01Q1/52, G06K17/00, H01F17/04, H01Q1/24, H01Q7/00,  
H04B5/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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Kokai Jitsuyo Shinan Koho	1971-2003	Jitsuyo Shinan Toroku Koho	1996-2003

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 09-284038 A (NHK Spring Co., Ltd.), 31 October, 1997 (31.10.97), Full text; all drawings (Family: none)	1, 7, 8, 16, 19-21 9-15, 17, 18 3
Y		
A		
X	JP 11-332631 A (Mitsubishi Materials Corp.), 07 December, 1999 (07.12.99), Full text; all drawings (Family: none)	2, 4
X	JP 10-107531 A (Toshiba Corp.), 24 April, 1998 (24.04.98), Full text; Fig. 12 (Family: none)	5, 6

☒ Further documents are listed in the continuation of Box C.☐ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&amp;" document member of the same patent family

Date of the actual completion of the international search  
03 April, 2003 (03.04.03)Date of mailing of the international search report  
15 April, 2003 (15.04.03)Name and mailing address of the ISA/  
Japanese Patent Office

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2001-056847 A (Mitsubishi Materials Corp.), 27 February, 2001 (27.02.01), Page 3, right column, lines 1 to 25; all drawings (Family: none)	9-16
Y	EP 0986037 A (Mitsubishi Materials Corp.), 15 March, 2000 (15.03.00), Full text; Fig. 5 & JP 11-339143 A Full text; Fig. 5 & WO 99/49437 A1 & US 6285284 B1	17,18
A	JP 10-162260 A (Mitsubishi Materials Corp.), 19 June, 1998 (19.06.98), Full text; all drawings (Family: none)	11-13